

Campaign to Stop Poison Poles

A Beyond Pesticides/NCAMP Education and Action Project

Jay Feldman and Greg Kidd, J.D.

The chemicals used as wood preservatives are among the most toxic pesticides known to humankind. Used in wood utility poles, railroad ties and in other similar applications, wood preservatives constitute the single largest pesticide use in the United States, accounting for nearly one billion pounds annually. Beyond Pesticides/NCAMP began to work for a more responsible federal policy on these chemicals back in the early 1980s when the Environmental Protection Agency (EPA) put them into a special review process (then known as Rebuttable Presumption Against Registration) because of the recognized hazards associated with their continued use. The process ended in 1987 with the prohibition of a number of uses of pentachlorophenol.

Beyond Pesticides/NCAMP's campaign continued with the publication of our report *Poison Poles: A Report About Their Toxic Trail and the Safer Alternatives* in 1997. Since the release of *Poison Poles*, we have continued to scrutinize EPA as the agency continues its plodding reevaluation of the three major wood preservatives, pentachlorophenol (penta), creosote and arsenicals. EPA is currently focusing its attention on penta, 95% of which is used to treat utility poles. With the release of our second report, *Pole Pollution: New Utility Pole Chemical Risks Identified by EPA While Survey Shows Widespread Contamination* in December 1999, we present EPA's hazard and risk evaluation of penta, released for the first time. Beyond Pesticides/NCAMP conducted a survey of over 3,000 utility companies in the U.S. and Canada in order to supplement EPA information with data on the real world use patterns of wood poles containing these toxic chemicals.

What we discovered is shocking. For example, EPA calculated that people hired to apply penta to in-service utility poles face a risk of cancer that is 3.4 million times higher than acceptable. Through our survey, we discovered that over 69% of the responding utilities are in the practice of giving away poles taken out of service. These poles are then milled and used around people's homes for fencing, land-

scaping and other building projects. EPA has failed so far to consider this type of exposure in calculating the risks associated with residential exposure to penta. There is no good method to dispose of treated wood without causing further contamination. Penta use should stop and the pipeline should be shut down. EPA has not yet considered the contaminants of penta, namely dioxin, furans, and hexachlorobenzene (HCB) – all of which rank at the top of the toxicity list – in its risk assessment. Because of this, the agency now has to draw out this process even further as it assesses the additional risks caused by the contami-

nants. Beyond Pesticides/NCAMP awaits the latest science chapter on penta, which EPA has promised to provide us with in late spring of 2000. We will follow the release of that information with a supplemental report.

Beyond Pesticides/NCAMP's campaign on utility poles now has two major prongs: to convince utility companies to be responsible corporate citizens and stop using toxic wood utility poles; and, to advocate that EPA ban all uses of penta. We know this can be done because of the outstanding efforts of a utility that has stopped using treated

wood poles, The Energy Cooperative in Newark, Ohio. Under the leadership of Mr. George Manning, that utility is now replacing all its wood poles with recycled steel poles. The Energy Cooperative has proven the economic feasibility of using alternative materials. EPA can no longer justify the continued use of penta, given the health risks associated with penta and the availability of alternative materials. We will continue to provide our input to EPA and inform the public as the agency moves toward a final decision on the continued use of penta and the other wood preservatives in 2000.

The following article is a summary of the most important findings contained in the full *Pole Pollution* report. The entire report can be found on our website at <http://www.beyondpesticides.org>. Excerpts from our earlier report *Poison Poles* can also be found on our website or is available for \$22 ppd. Contact Beyond Pesticides/NCAMP at 701 E St., SE, Suite 200, Washington, DC 20003.

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Pole Pollution

New Utility Pole Chemical Risks Identified by EPA While Survey Shows Widespread Contamination

Jay Feldman and Greg Kidd, J.D.

Introduction

We do not normally think of a utility or telephone pole as a hazardous material, but it is. It is so hazardous that EPA, in a preliminary science review, recently disclosed that a child exposed on an ongoing basis to the soil around a pole treated with pentachlorophenol (penta), one of several wood preservatives used in this way, has a chance of getting cancer that is 220 times higher than normal. This exposure alone accounts for at least 17,000 cases of cancer among children. Two children born every day are destined to a fate of cancer from just this exposure to penta.¹³

Beyond Pesticides/NCAMP produced this study (i) to disclose and critique EPA's current effort to reevaluate the hazards of wood preservatives, including pentachlorophenol, and (ii) evaluate utility companies practices with regard to the use, storage and disposal of utility poles treated with these chemicals. The findings are troubling and at points shocking. They call for action to better protect public health and the environment from pentachlorophenol.

Study after study show that penta and other wood preservatives have made their way into the environment. Penta has been shown to migrate out of poles, contaminating soil, and water.¹⁴ 100 percent of children tested in one study were found to have penta in their urine.¹⁵ At least 314 Superfund or chemical waste sites in the U.S. have been contaminated with penta.¹⁶ Concern for human health risks posed by wood preservatives lead twelve leading scientists to write the Administrator of EPA, Carol Browner, urging the agency to take action to stop this exposure. This same concern lead Beyond Pesticides/NCAMP to ask utility companies how they were handling their treated wood utility poles.

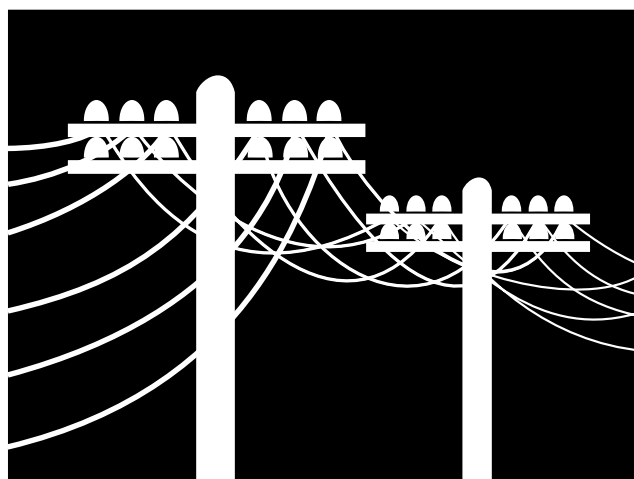
Survey Sent to Over 3,000 Utilities in the United States and Canada

In light of EPA's review and the known hazards of wood preservatives, including pentachlorophenol, a survey was conducted

by Beyond Pesticides/NCAMP of utility companies across the United States and Canada to determine company practices with regard to utility poles. Since 93 percent of all penta produced is used to preserve wood utility poles,¹⁷ this is no small issue for these companies. Beyond Pesticides/NCAMP also launched this study to bring real world or operational data to EPA's decision making process on continued use of wood preservatives, some of the most hazardous materials know to humankind. We began this effort with a survey of 3,000 plus utilities, which include investor owned utilities (IOUs), municipal utilities (MUNIs), rural electrification associations (REAs) and public utility districts (PUDs). Only 39 utilities in 24 states and Canada responded. None of the largest 100 IOUs chose to respond.

Beyond Pesticides/NCAMP views the survey as a basic tool for public right to know about the environmental practices of utilities across the country so that producers of treated wood poles can be adequately regulated to protect public health and environmental safety. After the distribution of the survey, the trade association for the wood treaters, the American Wood Preservers Institute (AWPI), immediately started a campaign to squelch participation in this survey. AWPI wrote to the utilities urging them not to cooperate with the survey. AWPI has a long history of seeking to weaken EPA's regulatory position on wood preservative restrictions and was extremely successful to that end during EPA's last review of the chemicals in the 1980's. In a memo from the association's president, utilities were told,

It has recently come to the attention of the American Wood Preservers Institute that the National Coalition Against the Misuse of Pesticides (NCAMP) is surveying utilities around the country on their use of poles treated with creosote, penta and CCA—as well as their use of poles made of alternative materials such as concrete and steel. The survey includes a wide range of questions about usage and disposal practices.



*Cooperating with this survey is not in the best interests of utilities. NCAMP is extremely biased against the use of preserved wood and will use the survey results to support their arguments against wood poles.*¹⁸

Thanks to those utilities that believe in disclosing basic business information as requested in the survey, the survey results provide a good sampling of what is going on across the country from utilities that inventory over one million utility poles covering at least 38,886 square miles (or 57,000 miles of road/pole miles).¹⁹

The culture of using utility poles treated with toxic wood preservatives runs deep in the utility industry. Furthermore, the method of managing, storing and disposing of poles shows a trail of poisoning and contamination with resulting hazards that surpass anyone's definition of acceptable. The public and the environment are at serious risk because of wood preservatives, including penta, and their use on utility pole.

Are utilities using utility poles that put the health of people and the environment at unacceptable risk? Yes. Could utilities decide not to use wood preservative-treated poles and utilize alternative approaches that do not present the same environmental and public health threat? Yes. Are they taking or planning to take this responsible step? No, gener-

ally they are not. These are the findings of Beyond Pesticides/NCAMP's survey of utility companies in the United States and Canada.

The survey reveals a number of widespread utility company practices that are of concern to Beyond Pesticides/NCAMP: storage of wood poles and giving away discarded poles to the public. It has been established that penta can, and does, leach out of wood utility poles.²⁰ The survey finds that 86 percent of the utilities store chemically treated wood poles on site. One utility reports storing as many as 7,200 poles at their facility. A typical utility pole of 12 inches in diameter and 45 feet in length contains 40 pounds of penta.²¹ A utility yard storing 7,200 penta poles represents 288,000 pounds (144 tons) of penta that could leach into the soil and ground water.

One of the most shocking findings in this report, in addition to the extraordinarily high risk factors associated with children and worker exposure, is the fact that the majority of utilities surveyed give away or sell to the public poles taken out of service. This practice exposes the public to serious hazards associated with handling, sawing and using the contaminated wood. Despite this widespread practice, EPA does not currently consider this exposure in its risk calculation. Apparently, the agency assumes that the activity does not go on.

Just How Hazardous is Pentachlorophenol?

Penta is currently banned in 26 countries around the world. It is a chlorinated aromatic hydrocarbon, which enables it to bioaccumulate in the human body, wildlife, and the environment. Commercial grade penta is contaminated with polychlorinated dibenzo-p-dioxins (PCDDs), polychlorinated dibenzofurans (PCDFs), and hexachlorobenzene (HCB): three related chemicals, which are all recognized as carcinogens, mutagens, teratogens and endocrine disruptors.¹ EPA's newly released draft review of penta finds extraordinary risks associated with typical exposure that a child might experience in communities across the United States that are dotted with pentachlorophenol-treated utility poles. What makes these findings even more shocking is EPA's failure to consider the risks associated with exposure to any of the contaminant ingredients that go into the alphabet toxic soup that is penta. EPA says it will get to that in the near future.

Penta is acutely neurotoxic, i.e. short-term exposure can cause sickness or death; at least 30 cases of penta exposure have resulted in death. Symptoms of mild penta poisoning include stuffy nose, scratchy throat, and tearing of the eyes. Skin contact can produce contact dermatitis and chloracne. A person experiencing systemic poisoning by penta would show symptoms of profuse sweating and intense thirst, rapid breathing and heart rate, fever, abdominal pain, nausea, weakness, lack of coordination, dizziness, anorexia, and coma.²

Penta targets the liver, kidneys and central nervous system with toxic effects occurring at low doses. Autopsies of victims

of fatal exposure to penta reveal changes in the brain, heart, kidneys, lungs, and liver.³

Chronic health effects from long term exposure to penta include: impairment of the immune system,⁴ interference with reproduction, birth defects,⁵ cancer,⁶ genetic mutation,⁷ and hormonal problems.⁸ Clearly, penta is highly toxic.

Equally dangerous is that penta has been shown to be ubiquitous in the environment. A study in Arkansas found 100% of 197 randomly selected, 2-6 year old children tested had penta in their urine.⁹ The National Health and Nutrition Examination Survey II (NHANES II) found penta in 79% of the general U.S. population.¹⁰ A study of human milk samples provided by nursing mothers found that penta was present in all of the milk samples; there were no special, identified sources of penta exposure of the mothers.¹¹

The combination of high toxicity and widespread contamination dictates that EPA treat the wood uses of penta no differently than the nonwood uses banned in 1987. As a result, it would be prudent and responsible to cancel all remaining uses of this unnecessary poison.

The new data disclosed in this report raises troubling issues about the risks to children and utility workers from utility poles. The report challenges utility companies to seek out alternative utility pole materials that once and for all put an end to the need for pentachlorophenol.

Utility companies must develop policies that minimize the risk to the public and the environment and move toward elimination of chemically treated wood utility poles.

One utility, Western Resources in Topeka, Kansas actually received an award in 1999 from the Kansas Department of Health and Environment for donating and converting discarded treated wood poles into such things as bird boxes and outdoor classrooms. Only one utility that we could identify distributed these poles with a Material Safety Data Sheet, which warns people that penta treated wood can cause irritation of the eyes and respiratory system. The MSDS says, "Pentachlorophenol has been found to have toxic effects in laboratory animals. . . Exposure to treated wood should be kept to a minimum. . . Exposure to penta during pregnancy should be avoided. . . Penta contains trace amounts of Hexa, Hepta, and Octochloro-dibenzo-p-dioxins, Hexa, Hepta, and Octachlorodibenzofurans, and Hexachlorobenzene. The State of California has listed Hexachlorodibenzo-p-dioxin and Hexachlorobenzene as chemicals known to the state to cause cancer." The EPA's draft

science chapter confirms the dangers associated with exposure to penta spelled out in the MSDS.

EPA's Preliminary Science Review of Penta

EPA's preliminary science review of penta finds extraordinarily high risks to children, workers, and the environment, including unacceptable risk from food and water. It should be noted that EPA's draft science chapter does not address perhaps the most toxic components of penta, the contaminants listed in the MSDS, which include dioxins, furans and hexachlorobenzene. Each one of these toxic components alone account for high risk factors in addition to those calculated for penta itself. In fact, the scientific peer review of EPA's *Inventory of Sources of Dioxin in the United States* (1998) notes that, "dioxin on treated wood appears to be

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the largest flow of dioxins that were quantified, thus making treated wood a large reservoir of dioxin in the environment."²²

In addition, penta and its contaminants have been determined to be endocrine disruptors, which act like hormones in the body during critical times in fetal development, when organs are forming, adversely affecting development, reproductive capacity, sexual development and causing diseases like cancer later in life. What makes these effects different from others is that they defy classical toxicology models which embrace the notion that the "dose makes the poison." In fact, with endocrine disruptors, like these wood preservatives, it is the *timing* of exposure, to minuscule doses at the parts per billion and even trillion level, that make these chemicals so destructive.

Regulatory issues

Can we expect the current regulatory review of wood preservatives, including penta, to take restrictive action that would stop the use of these chemicals and the resulting poisoning and contamination? The history of EPA's pesticide program would say no. The program engages in risk equations that ignore important pieces of information, such as the pole giveaway programs cited in this report and basic toxicology data that is missing but would only add to the mountain of hazards already established. Equally important is the failure of the agency to consider less risky approaches than wood preservative-treated utility poles, that are economically viable but not widely used by the utility industry. To determine a regulatory outcome by asking an industry that has used wood

Table i. Pentachlorophenol is Banned in 26 Countries¹²

All uses prohibited by final regulatory action due to health or environmental hazards.

Austria	Jamaica
Benin	Korea
Columbia	Liechtenstein
Costa Rica	Luxembourg
Denmark	Malaysia
Dominican Republic	Moldova
Egypt	Netherlands
Germany	Nicaragua
Guatemala	Panama
Hon Kong	Paraguay
India	Sweden
Indonesia	Taiwan
Italy	Yemen

preservative-treated utility poles since its inception whether it could use alternative pole materials like recycled steel, concrete or composite is to seal the fate of the decision in the hands of the status quo. That is, no change. EPA did just that in its last review of penta and other wood preservatives in 1981 (completed in 1987) when it said, "Due to the non-substitutability of the wood preservative compounds and the lack of acceptable non-wood or other chemical alternatives for many use situations, the economic impact which would result from an across-the-board cancellation would be immense."²³ Not true today. Our own research shows that the cost differential between treated wood and recycled steel poles is negligible in the short-term and benefits utility companies in the long-term.

Like other major EPA decisions that require a change in an industry's culture, very similar to moving farmers away from DDT and more modern pesticide-intensive operations, the public must get involved. The public will want to know: what the risk from contaminated soil around the pole in front of their homes or in the school yard means to their children's health; what are the impacts of reusing treated poles for outdoor classrooms; and, what does the storage and disposal of treated wood in the community mean for the health of people and the environment.

Rachel Carson wrote in *Silent Spring*, "Since the chlorinated hydrocarbons are persistent and long lasting, each application is merely added to the quantity remaining from the previous one."²⁴ The persistence of pentachlorophenol and its contaminants dioxin, furans and hexachlorobenzene have been established. The fact that they are contained in body tissues and fluids is established. The harm that they cause is established. It is time for their uses to stop. Alternatives are available and can be successfully and economically employed.

Findings

Preliminary Science Findings by EPA

- ▶ Residues of penta "in drinking water (when considered along with exposure from food and residential uses) pose an unacceptable chronic risk to children."
- ▶ Children exposed to penta in the soil around treated poles face a 2.2 in 10,000 (or 220 times higher than acceptable) risk of cancer. Just this exposure accounts for at least 17,000 cases of cancer among children. Two children born

every day are destined to a fate of cancer from just this exposure to penta.

- ▶ 13 of 14 occupations considered by EPA have unacceptable cancer risk, including risks as high as 3.4 in 1! How is that mathematically possible? Beyond Pesticides/NCAMP has been left to speculate that the unfortunate men and women whose job it is to apply fresh penta to standing wood poles become so contaminated with penta that they go on to contaminate their family, friends, and colleagues leading to an additional two and one-half cases of cancer.
- ▶ Over four people out of 10 who apply penta to wood in joinery mills and two people in a thousand who mix and load penta at pressure treatment plants are expected to get cancer from their exposure.
- ▶ Applicators of grease formulations of penta, used for retreatment of poles, face certain cancer.

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Utility Survey Findings

- ▶ 98.5 percent of utility poles in service are chemically-treated wood poles, 1.5 percent are alternative materials
- ▶ 56 percent of the poles in the survey are treated with pentachlorophenol.
- ▶ 34 percent of the utilities retreat their utility poles with fresh poisons during the poles' service life.
- ▶ 86 percent of the utilities store chemically treated wood poles on site.
- ▶ 69 percent of utilities responding to the survey give away or sell to the public wood preservative-treated poles taken out of service.
- ▶ One utility donated to the community treated wood poles that had been converted into bird boxes and outdoor classrooms.
- ▶ 18 percent dispose of the treated poles in local municipal landfills.
- ▶ Only five percent of respondents consider wood preservative-treated wood poles taken out of service as hazardous waste and dispose of them accordingly.
- ▶ Only one survey respondent distributes a Material Safety Data Sheet on the hazards of penta with the treated wood poles being sold or given away to the public.
- ▶ 27 percent of respondents indicated that they were considering alternative pole materials.



Recommendations

The EPA and other scientific finding taken together with utility company practices, raise serious concern about public and environmental health and call for the following recommendations:

EPA should:

- ▶ Immediately cancel all uses of penta and other wood preservatives with similar effects.
- ▶ Recall all existing stocks of penta.
- ▶ Begin phase-out the use of penta-treated replacement poles in 12 to 24 months.
- ▶ Prohibit the use of any remaining stocks of penta and other wood preservatives with similar effects.
- ▶ Require that all storage sites of treated poles are covered from the elements of weather.
- ▶ Define penta treated wood poles as hazardous waste and require their disposal as hazardous waste.
- ▶ Prohibit the giving away or sale of penta-treated poles taken out of service.
- ▶ Require utility companies to alert the public to the dangers associated with penta-treated poles.

Utilities should:

- ▶ Stop the purchase of treated utility poles, and begin purchase of poles constructed out of alternative materials.
- ▶ Develop policies to protect workers, the public and environment from exposure to penta and other similarly dangerous wood preservatives.
- ▶ Stop the sale or give-away of discarded treated wood poles for public use.
- ▶ Dispose of discarded treated wood poles at licensed hazardous waste sites.
- ▶ Increase the use of alternative types of utility poles, working towards elimination of the use of chemically treated wood utility poles.

Conclusions and Recommendations

Despite warnings about their hazards, widespread contamination, levels in human body tissue and fluids, extreme effects on workers and special risks to children, pentachlorophenol and the other wood preservatives have escaped the regulation necessary to adequately protect public health and the environment. The latest EPA science review and recent findings on dioxin contamination associated with penta and treated utility poles calls for a break with the history of special interest politics that has allowed the continued use of wood preservatives. They can be economically replaced by safer alternative pole materials, such as steel, concrete and composite or by burying lines.

Wood preservatives, used to treat millions of utility poles across the country, pose a serious threat to public health and the environment. The chemicals, used widely to extend the life of wood products, including over 130 million utility poles, contain some of the most hazardous toxic contaminants on the market. The chemicals include pentachlorophenol, creosote, arsenic and chromium VI and contaminants such as dioxin, furans and hexachlorobenzene. The sole purpose of these chemicals is to preserve wood by killing organisms that come in contact with the wood poles such as insects, bacteria and fungus.

Penta leaves a toxic trail, which includes the production of wood utility poles, and their retreatment, storage and disposal. There are at least 795 wood preserving facilities across the country and hundreds of Superfund hazardous waste sites that are contaminated with penta. Treated poles continue to pollute after they are taken out of service and used as fence posts, bird houses, outdoor classrooms, or other building material.

Beyond Pesticides/NCAMP's Poison Poles Campaign began with the development and distribution of *Poison Poles: Their Toxic Trail and the Safer Alternatives*. *Poison Poles* successfully brought the issue of the widespread contamination and poisoning from the use of wood preservatives on utility poles and availability of alternatives in front of utility industry executives and decision makers, environmental regulators, consumer activists, utility regulators and the general public.



With an eye toward EPA's current reevaluation of the wood preservatives, starting with penta, Beyond Pesticides/NCAMP recognized the importance of following up *Poison Poles* with a survey of utility companies. The survey has provided real world numbers with which to measure the EPA's risk assessment of penta. What has been discovered is alarming.

Utility companies, in general, prefer penta treated wood utility poles to any other type, according to survey results. Most utility companies store treated wood utility poles on site. These stored poles represent large, concentrated reservoirs of penta and other wood preservatives that leach out of the poles into soil and ground water. Many utility companies retreat their aging stock of wood poles to increase their lifespan. Retreating wood poles provides a fresh source of penta to contaminate our environment and our bodies.

Most alarming is the majority of utility companies that give away or sell their used treated wood poles to the public. The unsuspecting handy-person that cuts the treated poles to size brings the highly toxic penta and its deadly contaminants into even more intimate contact with the public.

EPA has determined that penta and its contaminants do leach out of treated wood utility poles. EPA has noted that dioxins in treated wood appear to be the largest quantified flow of dioxins into the environment. EPA calculated cancer risks for children as a result of their exposure to penta. The agency found that children face a risk of cancer that is as high as 220 times greater than levels deemed acceptable from exposure to soil contaminated with penta treated wood poles; the same penta treated wood poles that are planted in countless neighborhoods across the country.

EPA recognizes that the unfortunate people that are exposed to penta on the job face an astronomically high risk of cancer. The most shocking example is the risk faced by people retreating wood poles with liquid penta; according to the EPA, they have a 100 percent chance of getting cancer.

What has emerged since the survey was launched in Summer 1999 is the wood treatment and utility industries' unwillingness to have a public debate on key issues that affect public health and environmental safety. The American Wood Preservers Institute's efforts to stop the free flow of information to the public on basic utility industry practices, as evidenced by its president's memo telling utilities not to cooperate with the survey, raises serious concerns about what the industry has to hide. The new EPA assessments of extraordinarily high risk associated with penta-treated utility poles seem to shed light on why they want public debate stopped. Pentachlorophenol and its contaminants have poisoned and contaminated long enough. The industry knows this.

What will it take to reduce and eliminate this human health and environmental threat? It will take an active public to push for the adoption of alternatives and a more aggres-

sive regulatory climate to provide improved protection of public health and the environment. It will take EPA breaking with its history and it will take a cultural shift on the part of the utility industry.

Taking Action

What people and community groups can do:

In order to begin a dialogue with local and regional utility companies, Beyond Pesticides/NCAMP developed the survey discussed in this report. The survey questions utility companies on their utility pole practices.

- ▶ Contact your local utility and arrange for a meeting with the chief executive officer.
- ▶ Ask that the survey be completed. If you cannot get a meeting, mail the survey.
- ▶ Present the findings of *Pole Pollution* and *Poison Poles*.
- ▶ Make a formal request that the utility consider and adopt a policy to stop purchasing treated wood poles and begin purchasing the alternatives.
- ▶ Ask for a response by a specific date.
- ▶ Begin a community drive for the changes you are requesting if the utility is unresponsive.
- ▶ Circulate a petition to community and civic organizations, through religious institutions, school groups and local environmental and social groups to generate support for changes.
- ▶ Enlist local leaders, such as politicians, clergy, educators, and others.
- ▶ Identify wood preservative problems in your community or nearby communities.
- ▶ Notify the local media (newspaper, television, and radio) about the campaign, the survey and your concerns.
- ▶ Hold a public forum and invite the community and engage the utilities in debate on the subject.

Contact EPA

Tell EPA to remove pentachlorophenol from the market because it is no longer needed. Write Carol Browner, Administrator, EPA, 401 M Street, SW, Washington, DC 20460.

Contact Beyond Pesticides/NCAMP for More Information

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To view a complete copy of *Pole Pollution* visit Beyond Pesticides/NCAMP on line at www.beyondpesticides.org.

Notes

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- ¹² From – Pesticide Action Network, “1995 Demise of the Dirty Dozen,” and United Nations, “Consolidated List of Products Whose Consumption and/or Sale Have Been Banned, Withdrawn, Severely Restricted or Not Approved By Governments,” Fifth Issue, 1994.
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